WHAT IS CLAIMED IS:

1. A filter comprising an absorptive system containing at least one polymer having acidic or basic groups along the polymer chain.

2. The filter of Claim 1, wherein the absorptive system comprises an acidic/basic polymer selected from the group consisting of polystyrene sulfonic acid, polyvinyl sulfonic acid, poly(acrylic acid), polyethyleneimine, ethoxylated polyethyleneimine, poly(2-vinylphenol), sol gels having acidic or basic groups thereon, orgosils having acidic or basic groups thereon, and combinations thereof.

3. The filter of Claim 2, wherein the acidic/basic polymer is polystyrene sulfonic acid.

4. The filter of Claim 2, wherein the acidic/basic polymer is ethoxylated polyethyleneimine.

5. The filter of Claim 2, wherein the absorptive system comprises a first layer containing polystyrene sulfonic acid, and a physically separated second layer containing ethoxylated polyethyleneimine.

6. The filter of Claim 1, wherein the absorptive system further comprises one or more hygroscopic polymers.

7. The filter of Claim 6, wherein the one or more hygroscopic polymers are selected from the group consisting of polyethylene glycols, poly(2-hydroxyethyl methacrylate), polypentaerythritol ethoxylate, poly(N,N-dimethyl-3,5,dimethylene) piperidium chloride, quaternized polyimidazoline, polyacrylamide, and combinations thereof.

8. The filter of Claim 1, wherein the absorptive system comprises (i) a first layer containing an acidic/basic polymer, and (ii) a second layer

containing one or more hygroscopic polymers, wherein the first layer is separate from and in contact with the second layer.

9. The filter of Claim 8, wherein the second layer represents at least one outermost layer of the filter, while the first layer does not represent an outermost layer of the filter.

10. The filter of Claim 1, wherein the absorptive system further comprises one or more reactive additives selected from the group consisting of catalytic reactants, stoichiometric reactants, catalytic/stoichiometric reactants, acid-scavenging agents, base-scavenging agents, reactive nanoparticles, water, and a combination thereof.

11. The filter of Claim 1, wherein the absorptive system further comprises reactive nanoparticles.

12. The filter of Claim 1, wherein the absorptive system comprises:

(i) an acidic/basic polymer selected from the group consisting of polystyrene sulfonic acid, polyvinyl sulfonic acid, poly(acrylic acid), polyethyleneimine, ethoxylated polyethyleneimine, poly(2-vinylphenol), sol gels having acidic or basic groups thereon, orgosils having acidic or basic groups thereon, and combinations thereof;

(ii) one or more hygroscopic polymers selected from the group consisting of polyethylene glycols, poly(2-hydroxyethyl methacrylate), polypentaerythritol ethoxylate, poly(N,N-dimethyl-3,5,dimethylene) piperidium chloride, quaternized polyimidazoline, polyacrylamide, and combinations thereof; and

(iii) one or more reactive additives selected from the group consisting of catalytic reactants, stoichiometric reactants, catalytic/stoichiometric reactants, acid-scavenging agents, base-scavenging agents, reactive nanoparticles, water, and a combination thereof.

13. The filter of Claim 1, wherein the absorptive system further comprises one or more non-volatile species within the absorptive system, wherein the one or more non-volatile species are reaction products resulting from one or more reactions with one or more reactive additives within the absorptive system.

14. The filter of Claim 1, further comprising a substrate, wherein the absorptive system coats at least a portion of an outer surface of the substrate.

15. The filter of Claim 14, wherein the substrate comprises a non-woven fabric, a woven fabric, a knitted fabric, a film, a foam, a honeycomb structure, particulate material, a mesh or screen, a fiber, a wood product, paper, a glass sheet or bead, a ceramic bead, a polymeric bead, plywood, gypsum board, a ceiling tile, or any combination thereof.

16. The filter of Claim 14, wherein the substrate comprises a non-woven fabric, a woven fabric, a knitted fabric, a film, a foam, a honeycomb structure, particulate material, a mesh or screen, a fiber, a flake, a powder, or a polymeric bead; and wherein the substrate is formed from polyolefin, polyethylene, polypropylene, a polyester, a polyamide, nylon 6, nylon 66, a cellulosic material, or a combination thereof.

17. The filter of Claim 14, wherein the substrate comprises a polyamide non-woven fabric.

18. The filter of Claim 14, further comprising a housing to at least partially contain the absorptive system, the substrate or both.

19. A method of removing particles or one or more volatile or semi-volatile compounds from a fluid stream, said method comprising:

bringing the fluid stream and the filter of Claim 1 in contact with one another.

20. The method of Claim 19, wherein the fluid stream comprises an air stream.

21. A filter comprising:

an absorptive system containing at least one acidic polymer, at least one basic polymer, or a combination of at least one acidic polymer and at least one basic polymer physically separated from one another;

a substrate, wherein the absorptive system coats at least a portion of an outer surface of the substrate; and

an optional housing to at least partially contain the absorptive system, the substrate or both.

22. The filter of Claim 21, wherein the absorptive system comprises an acidic polymer selected from the group consisting of polystyrene sulfonic acid, polyvinyl sulfonic acid, and poly(acrylic acid); a basic polymer selected from the group consisting of polyethyleneimine, ethoxylated polyethyleneimine, and poly(2-vinylphenol); or a physically separated combination thereof.

23. The filter of Claim 21, wherein the absorptive system comprises a combination of at least one acidic polymer and at least one basic polymer physically separated from one another.

24. The filter of Claim 21, wherein the absorptive system further comprises water.

25. A method of removing particles or one or more volatile or semi-volatile compounds from a fluid stream, said method comprising:

bringing the fluid stream and the filter of Claim 21 in contact with one another.

26. The method of Claim 25, wherein the fluid stream comprises an air stream.

27. A method of removing particles or one or more volatile or semi-volatile compounds from a fluid stream, said method comprising the steps of:

bringing the fluid stream into contact with a filter, wherein the filter comprises an absorptive system containing at least one acidic polymer, at least one basic polymer, or a combination of at least one acidic polymer and at least one basic polymer physically separated from one another.